



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

MAR 17 1994

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

**MEMORANDUM**

**SUBJECT:** Response to Registrant's Rebuttal of Imazapyr Data Reviews (D199343)

**FROM:** *for* Anthony F. Maciorowski, Chief  
Ecological Effects Branch  
Environmental Fate and Effects Division (H7507C) *Douglas J. Urban*

**TO:** Kathryn Davis, PM-52  
Special Review and Reregistration Division (H7508W)

The Ecological Effects Branch has reviewed the American Cyanamid rebuttal for the Avian Reproduction (71-4), Estuarine Mollusk (72-3), Early Life Stage Fish (72-4), and Vegetative Vigor, Seed Germination, and Seedling Emergence (123-1) Toxicity testing of Imazapyr. This action is under D199343.

American Cyanamid has agreed to submit avian reproduction studies for quail and duck by October 1, 1995.

**Estuarine Marine mollusk (72-3 (b)) MRID# 41315802**

EEB has declared the study to be invalid because the control oysters did not achieve a minimum of 2 mm of shell growth.

The registrant has said that they are not aware of final guidance that stipulates a minimum value for new shell disposition. Furthermore, oyster growth is a highly variable parameter.

EEB maintains that a minimum of 2 mm new shell growth is necessary in that less than 2 mm of new growth is indicator that the oysters are under going stress. The test conditions may have contributed to stress on the oysters by having the flow-through rate of 1.05 L/oyster/hour with no supplemental food added. The SEP provides for a flow-through rate of 5 L/oyster/hour.



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To: Kathryn Davis  
 Product Manager  
 Special Review and Reregistration Division (H7508W)

From: Anthony F. Maciorowski, Chief  
 Ecological Effects Branch/EFED (H7507C)

Attached, please find the EEB review of...

Reg./File # : S458245  
 Chemical Name : Imazapyr  
 Type Product : Herbicide  
 Product Name : Arsenal  
 Company Name : American Cyanamid  
 Purpose : Review rebuttal to upgrade 72-4 (MRID41315804), 72-3 (MRID 41315802) and data requirements for plants

Action Code : 627 Date Due : 5/11/94  
 Reviewer : Mike Davy Date In EEB: 2/17/94

EEB Guideline/MRID Summary Table: The review in this package contains an evaluation of the following:

GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT
71-1(A)			72-2(A)			72-7(A)		
71-1(B)			72-2(B)			72-7(B)		
71-2(A)			72-3(A)			122-1(A)		
71-2(B)			72-3(B)			122-1(B)		
71-3			72-3(C)			122-2		
71-4(A)			72-3(D)			123-1(A)		
71-4(B)			72-3(E)			123-1(B)		
71-5(A)			72-3(F)			123-2		
71-5(B)			72-4(A)			124-1		
72-1(A)			72-4(B)			124-2		
72-1(B)			72-5			141-1		
72-1(C)			72-6			141-2		
72-1(D)						141-5		

Y=Acceptable (Study satisfied Guideline)/Concur

P=Partial (Study partially fulfilled Guideline but additional information is needed)

S=Supplemental (Study provided useful information but Guideline was not satisfied)

N=Unacceptable (Study was rejected)/Nonconcur

From the distance of Gainesville to the ocean, it appears that the seawater was trucked in from the ocean. During such time, the food organisms (such as algae) may have been inhibited during the transport and storage. The oysters may not be feeding very well because of low flow rate and no supplemental food added thereby causing no adequate shell deposition. Since there was some dose response, EEB will upgrade the study to supplemental.

**Early Life Stage Fish (72-4)(a)) MRID# 41315804**

The study was categorized as unacceptable due to poor embryo survival in the control. The registrant has indicated that the EPA SEP state that the test should be terminated if the average percent of embryo (after thinning) that produce live fry for release into the control treatment is less than 50 percent.

Although the SEP allows no less than 50 percent average of embryos that produce live fry for release into the test chambers, the current thinking among professionals in the field, the ASTM in 1987, and OECD in 1992 is that no less than 66 percent of the embryos should be permitted. Therefore, this study should not be upgraded but be classified as supplemental.

**Seed Germination, Seedling Emergence, Vegetative Vigor and Aquatic Plant Growth in TEP (123-1, 123-2)**

EEB has recommended typical end product (TEP) testing for seed germination, seedling emergence, vegetative vigor and aquatic plant growth using the isopropylamine salt of the acid. The registrant has responded that they would like to test the most sensitive species of monocot and dicot for seed germination, seedling emergence, and vegetative vigor and an algae, diatom and duckweed species for aquatic growth test.

After reevaluation, EEB concludes that the only data necessary for a complete risk assessment would be TEP testing of soybean, sugarbeet and onion in the vegetative vigor study (123-1(b)) and testing with only *Lemna gibba* and *Selenastrum capricornutum* in the aquatic plant growth study (123-2). No TEP testing for seed germination and seedling emergence is required for our risk assessment.

## Conclusions

EEB has reviewed the rebuttal from the registrant concerning Imazapyr testing on oyster (72-3 (b)) and upgraded the study to supplemental. The Fish Early Life Cycle (72-4) study remains classified as supplemental. A very rough preliminary estimated exposure (EEE) for aquatic is 1.5 ppm (1.5 lb ae/A x 5% runoff x 10A x 61 ppb). The  $EC_{50}$  for oyster is >137 ppm and the NOEL from the Fish Early Life Cycle study is 43.1 ppm. Therefore, no further testing is needed on the 72-4 Fish Early Life Cycle study and 72-3 (b) oyster toxicity study.

TEP testing using the isopropylamine salt of the imazapyr acid for soybean, sugarbeet and onion in the vegetative vigor study (123-1(b)) and testing with only *Lemna gibba* and *Selenastrum capricornutum* in the aquatic plant growth study (123-2) is needed for EEB to complete the risk assessment for plants. No TEP testing for seed germination and seedling emergence is required for our risk assessment.

The registrant has agreed to submit avian reproduction studies for the bobwhite quail and the mallard duck (71-4).

If you have any questions, please do not hesitate to contact Mike Davy at 305-7081.